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AUGUST 1951

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JOURNAL OF THE IRON AND STEEL INSTITUTE

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VOL. 168 PART 4

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XUM

THE STEEL COMPANY OF WALES LIMITED

ABBEY WORKS · PORT TALBOT

Starting Production . . . .

The Hot Strip Mill at Abbey Works is now undergoing final tests and trials. Erection of the finishing equipment for processing the Hot Rolled Coils into Sheets and Tinplates is progressing steadily.

All Sheets whether Hot Rolled or Cold Reduced will be rolled in continuous form combining high finish with accuracy of gauge.

Export Sales Organisation for Mild Steel Flat Rolled Products

RTSC EXPORTS LIMITED
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Designers and Constructors of

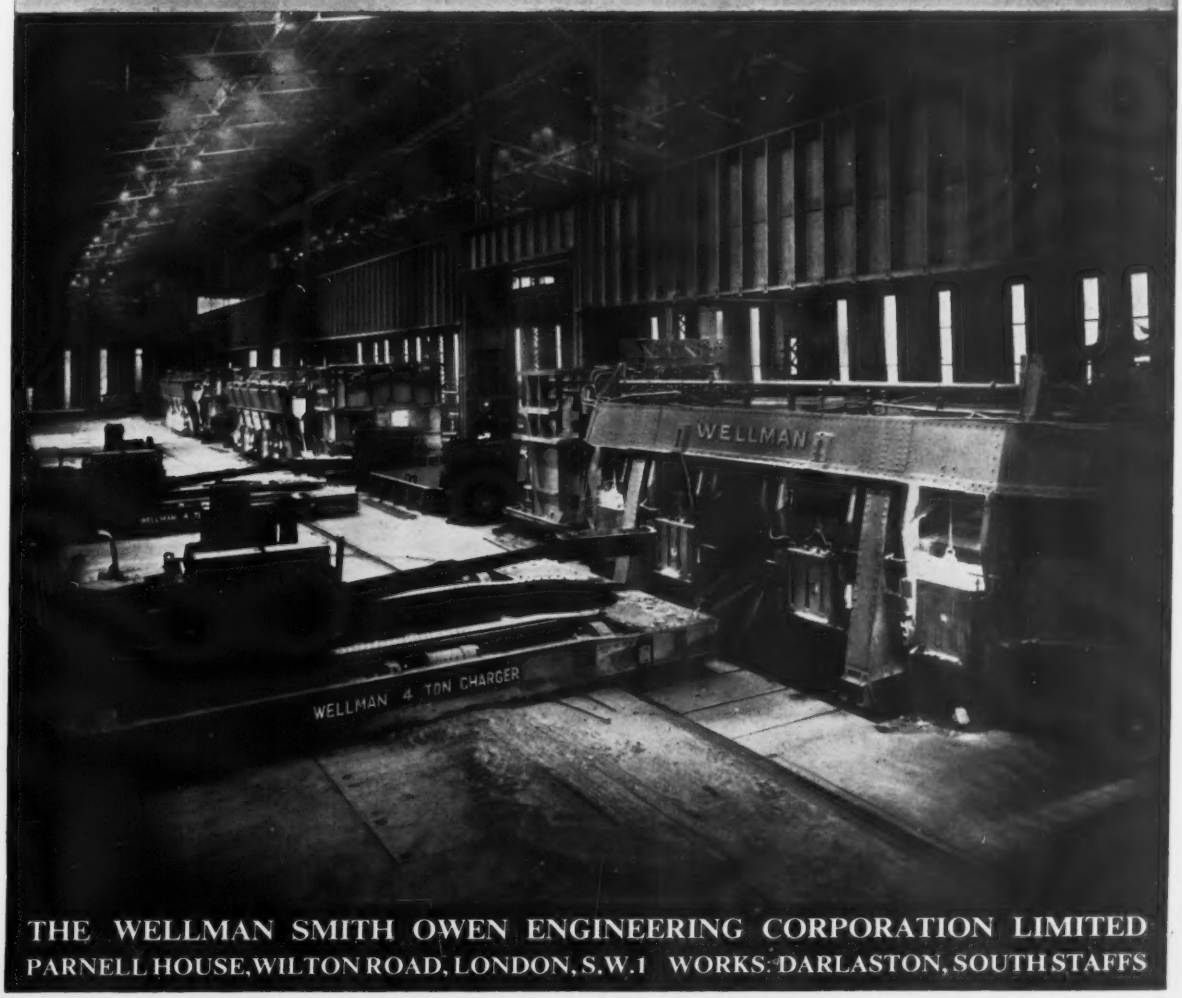
Complete Steelworks Installations

The illustration below shows part of a recent Wellman Open Hearth Steelworks Installation comprising:—

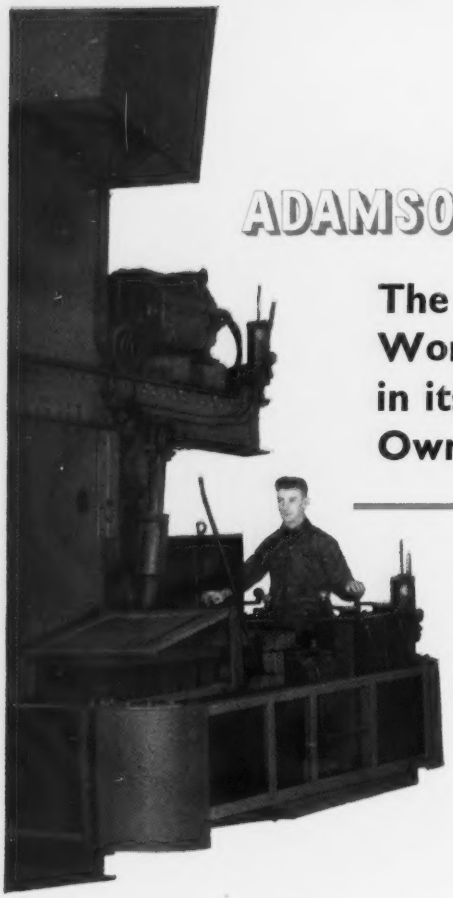
Two 4-ton Low Ground type Furnace Chargers. **One 600-ton Active Metal Mixer.**

Two 300/350-ton O.H. Tilting Furnaces. **Two 140-ton Ladle Cranes.**

This post-war Melting Shop, one of the first to be completed under the expansion programme of the British Iron and Steel Industry, incorporates the latest designs in furnace construction and material handling equipment and constitutes a complete open hearth steel-making department of the highest efficiency.



THE WELLMAN SMITH OWEN ENGINEERING CORPORATION LIMITED
PARNELL HOUSE, WILTON ROAD, LONDON, S.W.1 WORKS: DARLASTON, SOUTH STAFFS



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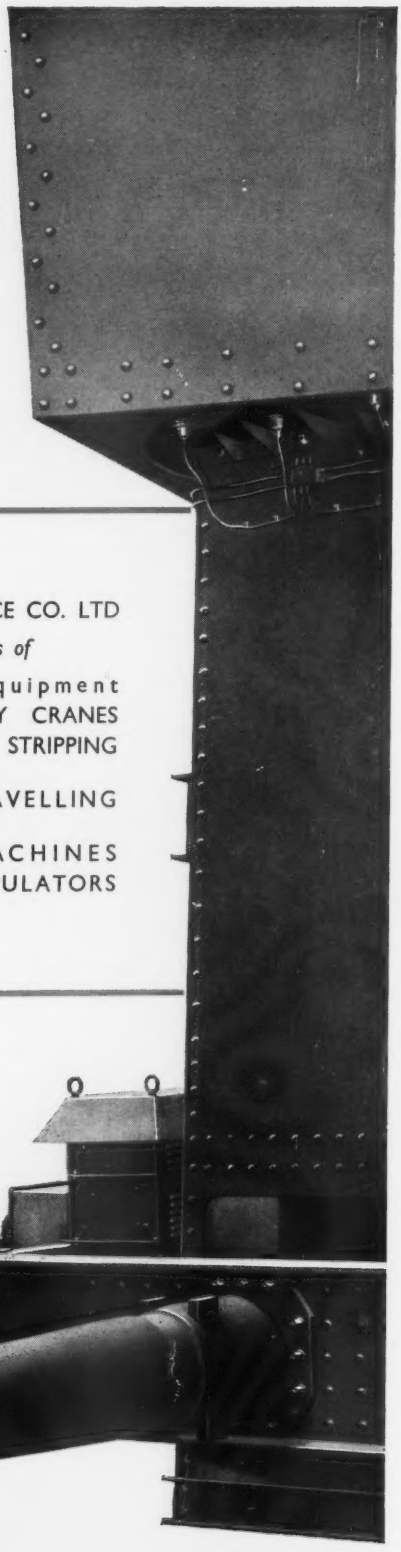

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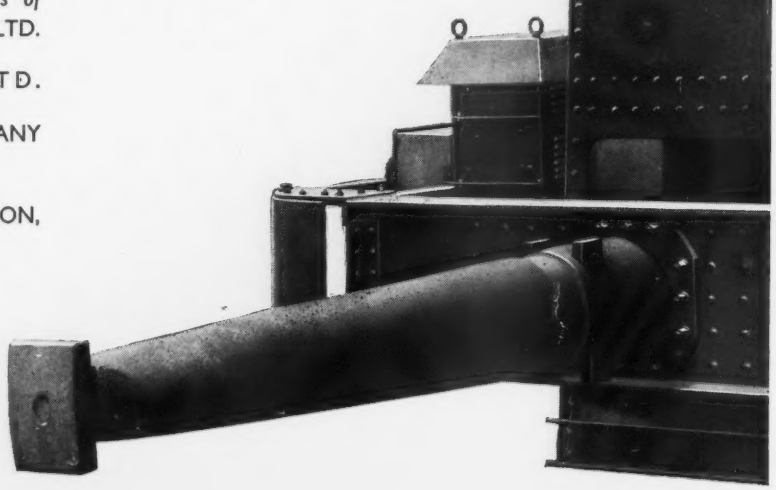

R 33

Making the most of available coal

Available coal often means local coal, and the Riley Stoker is designed to burn with the maximum efficiency coals from all parts of the country. It stokes mechanically and controls boiler temperatures automatically. And along with the saving it makes on coal goes the advantage of smokeless combustion. Moreover, the Riley is extremely robust —most parts are of heavy cast iron—and there is a model to suit every normal type of boiler. Let us send you a full description in Booklet R.461B.

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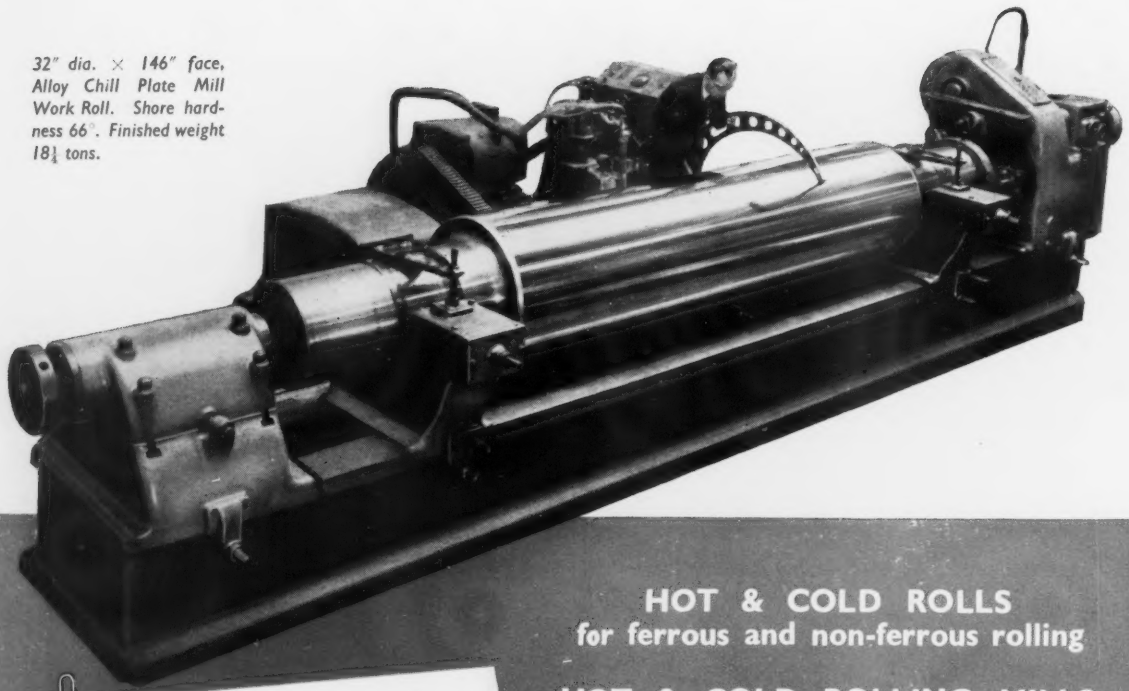
32" dia. × 146" face, Alloy Chill Plate Mill Work Roll. Shore hardness 66°. Finished weight 18¼ tons.



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Britain appraises achievement

BEARDMORE

The name Beardmore became axiomatic as Parkhead Works developed the world's toughest steels... as it has continued to do. Capacity, by all measures, has also shown increase.

These things are exemplified at the Festival of Britain Exhibition in Glasgow, in a display which is spectacularly impressive and of high technical interest.

WILLIAM BEARDMORE & CO. LIMITED PARKHEAD STEEL WORKS, GLASGOW, E.1

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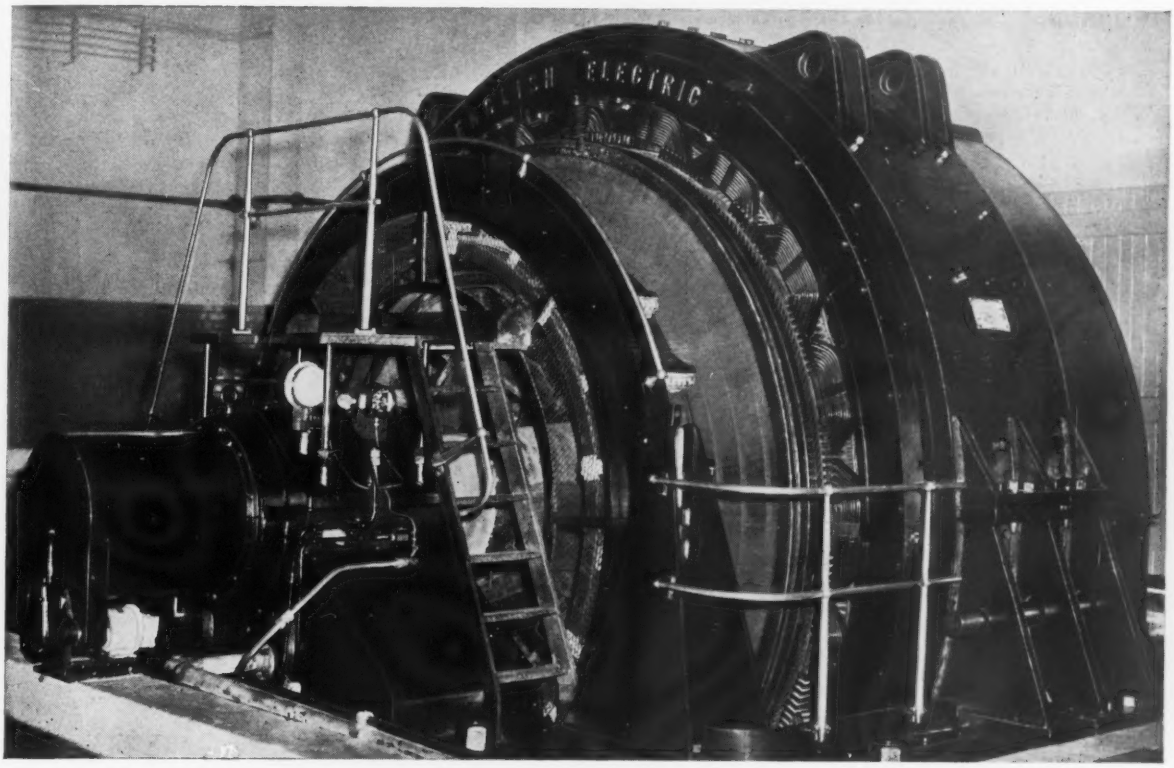
Hopwood

'ENGLISH ELECTRIC'

rolling mill drives



Workington Iron and Steel

Week by week the British steel industry records new production achievements. In the great effort to meet ever-rising demands from home and foreign markets 'English Electric' equipment plays a widespread and worthy part.

A number of new and important rolling-mill drives have been installed by 'English Electric' in post-war years. All exhibit features which emphasize the value of the Company's 40-year experience in this field; the considerable number of drives installed have included the largest yet built in Britain.

The motor shown is driving a 39" Reversing Cogging Mill and has a continuous rating of 3,250 h.p. at 35/70 r.p.m. and a Cut-out Torque of 1,470,000 lb. ft. (9,750 h.p., 0/35 r.p.m.). Incorporated in the control of such mills are special characteristics to give rapid response and at the same time fully protect the equipment.

The ENGLISH ELECTRIC Company Limited

QUEENS HOUSE, KINGSWAY, LONDON, W.C.2

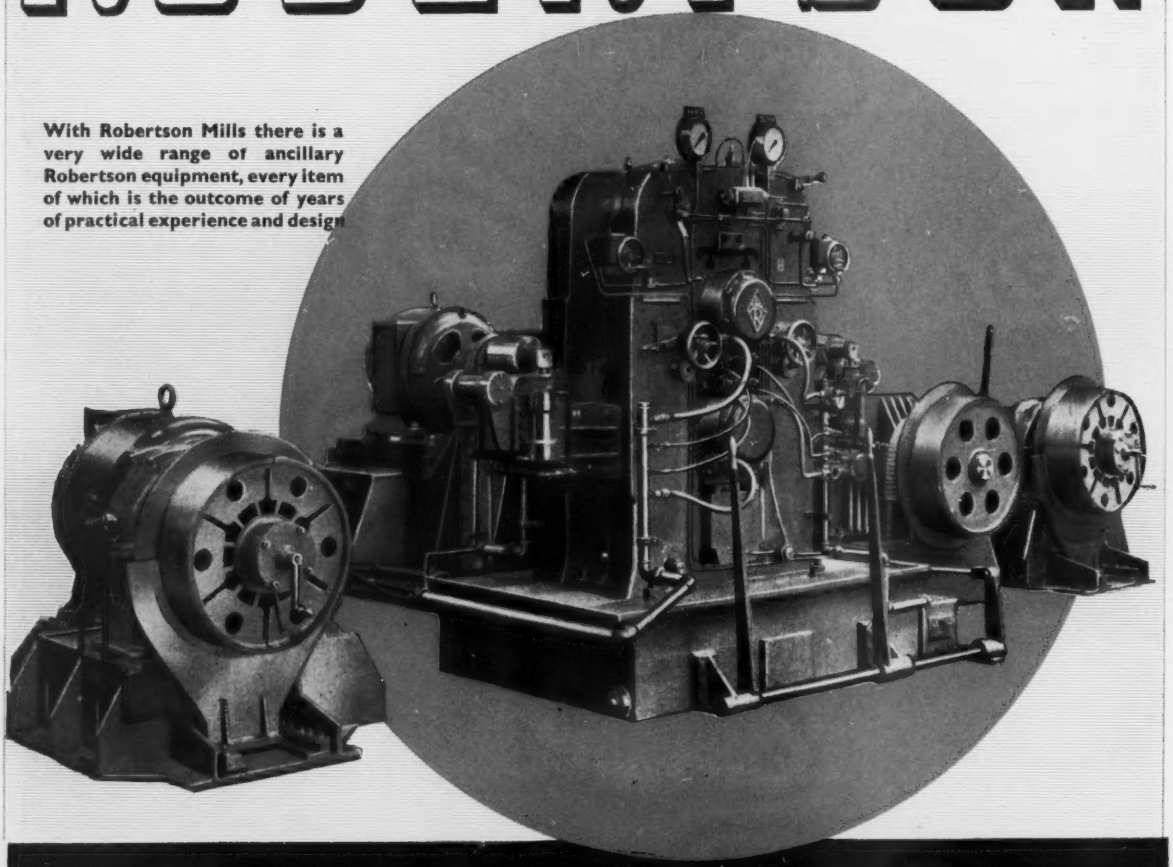
Metal Industries Division, Stafford

WORKS: STAFFORD · PRESTON · RUGBY · BRADFORD · LIVERPOOL

DRM1

ROBERTSON

With Robertson Mills there is a very wide range of ancillary Robertson equipment, every item of which is the outcome of years of practical experience and design



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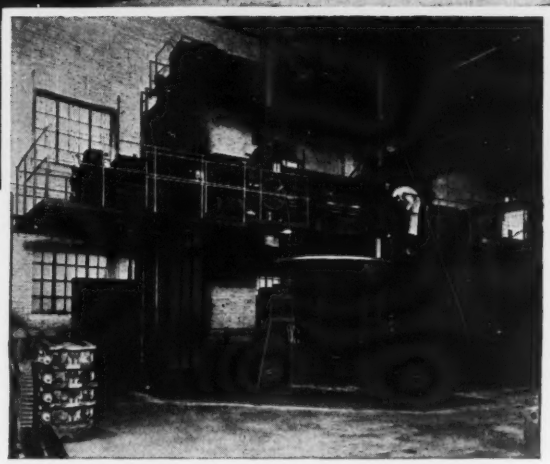

The upper illustration shows a mild steel fractionating column 4 ft. inside diameter by 58 ft. overall height, the supporting cone flared to 8 ft. 10 in. diameter in 10 ft. Approx. weight 12½ tons.

The inset illustration shows a vertical boring mill recently installed in the Machine Shop at Widnes. The table is 18 ft. 5 in. in diameter with a clear height under the cross-rail of 13 ft. 11 in.

The engineering service offered by WIDNES FOUNDRY includes fabrication in mild and stainless steels of specialised plant and equipment for the chemical, gas, oil and allied industries. The fabrication of Coolers, Condensers, Storage Tanks and similar constructional work is the logical parallel to production of cast iron vessels in heat and acid resisting, high duty and alloy irons for the industries mentioned, In foundry work and in fabrication in steel WIDNES offer a skilful comprehensive service to industry.

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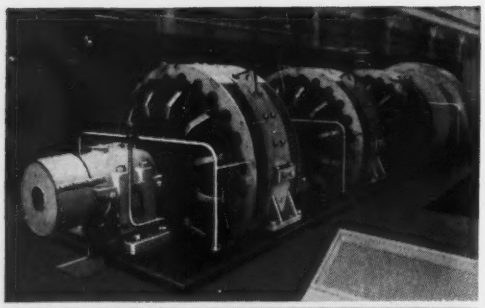
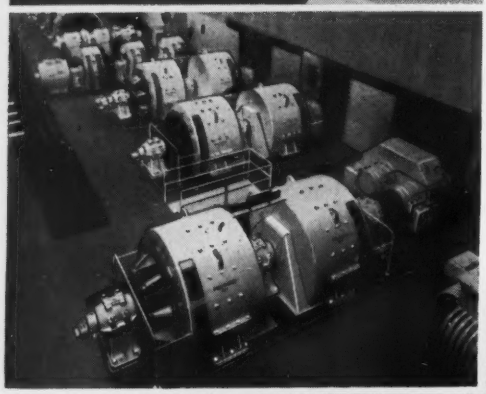
W/15

Rolling Mill Equipment





BTH manufacture electric drives for all types of rolling mills. Main illustration shows a BTH equipped 66″ three-stand tandem cold rolling mill, with tension reel, at the Rogerstone Works of Northern Aluminium Co. Ltd. Illustrated centre is the motor house with three double-unit 2,600 H.P. mill-motors, and above, the main four-unit motor-generator set comprising three 2,600-kW generators driven by a 10,000-H.P. synchronous motor

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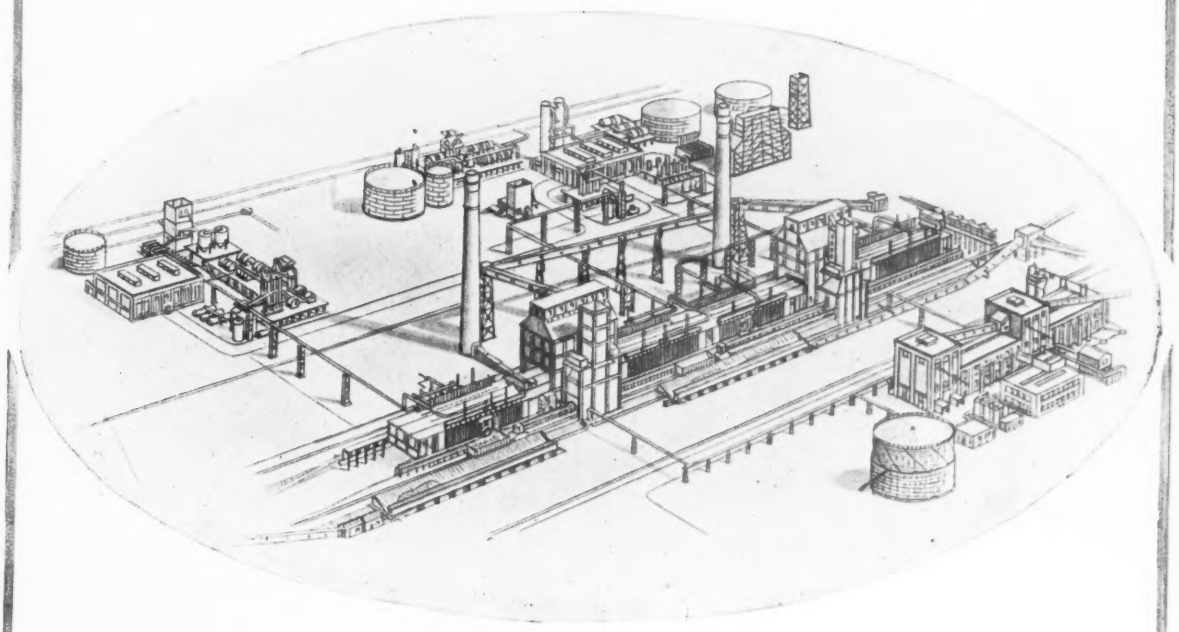
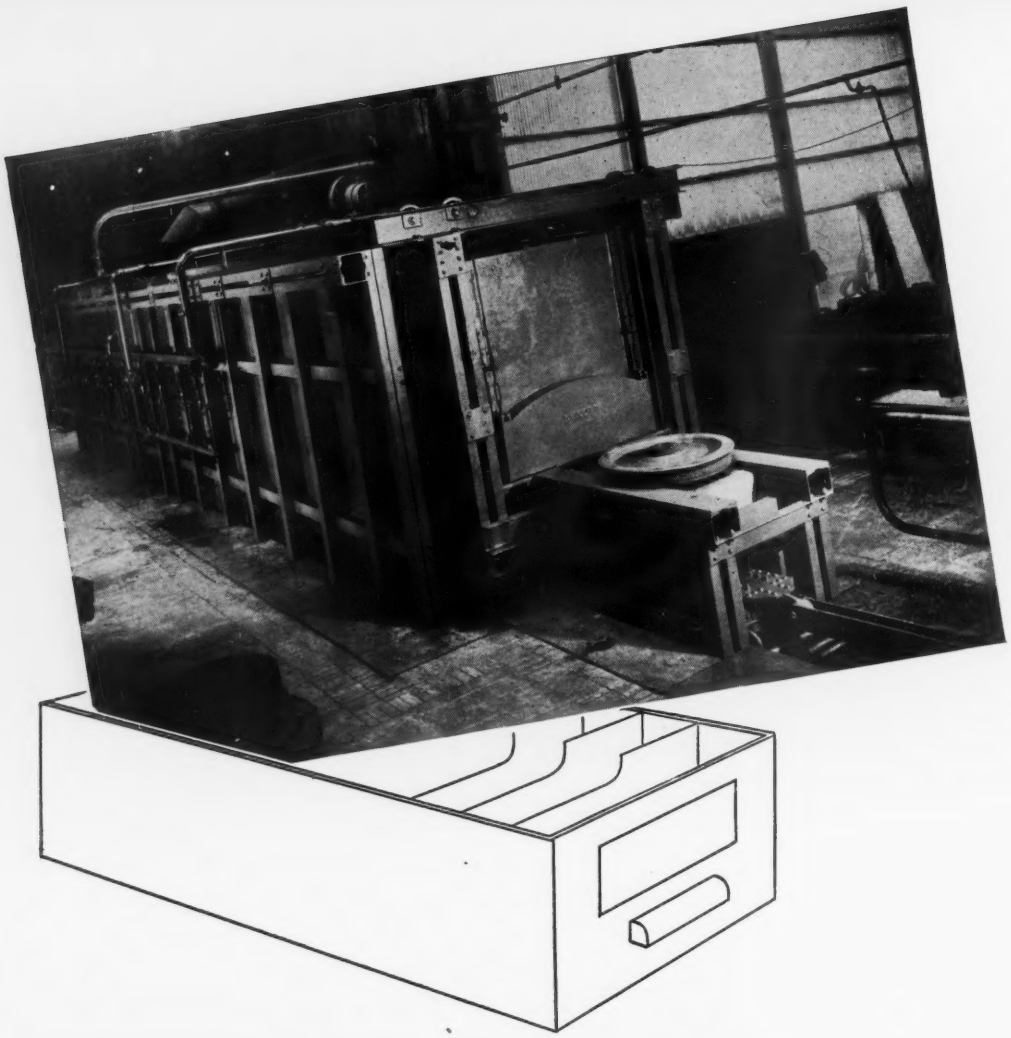


W-D KOPPERS Coke Oven Installation carbonising 2,400 tons of coal per day at the World's Largest Gas Works—The Beckton Station of the North Thames Gas Board.

THE WOODALL-DUCKHAM VERTICAL RETORT AND OVEN CONSTRUCTION CO. (1920) LTD.
Woodall-Duckham House, 63-77 Brompton Road, London, S.W.3
Members of the Society of British Gas Industries
Tel: KENsington 6355 (10 lines) Grams: Retortical (Southkens) London



This is a Moving Hearth Furnace fired by Coke-Oven Gas and designed for the heat treatment of Wheels before water spraying and tempering.

The furnace is 49′ 0″ long and takes wheels up to 48″ dia., weighing 1,350 lbs. each.

The Moving Hearth is carried on a series of lifting units connected by push-pull rods, and the cycle of lifting, charging, lowering, and return is hydraulically operated and completely automatic.

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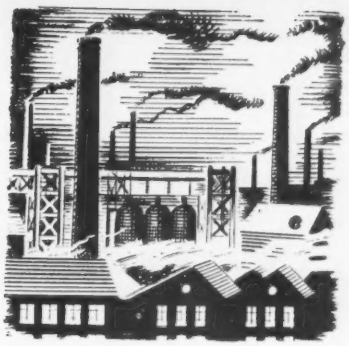

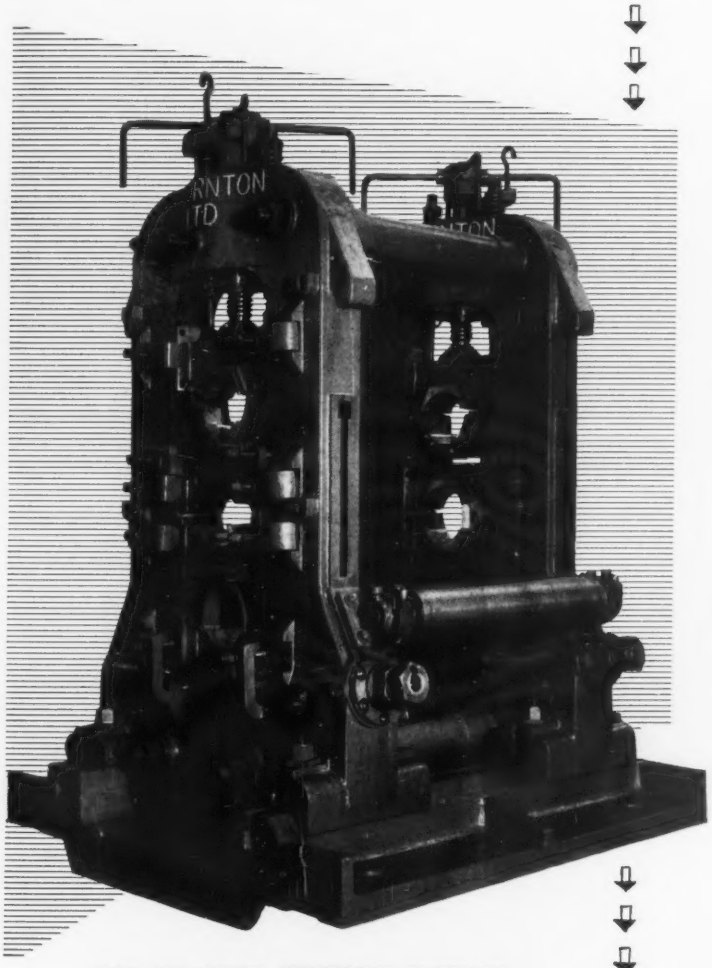

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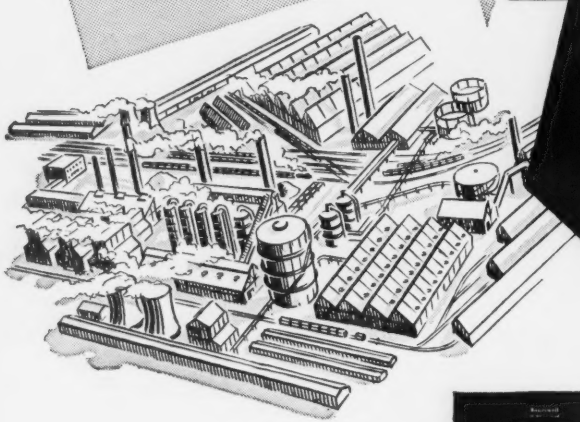

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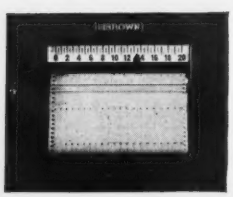
OPEN HEARTH
RE-HEATING FURNACES
LIQUID STEEL
ANNEALING COVERS
PICKLING & CLEANING LINES

Brown "ElectroniK" Circular Chart Potentiometer Recorder Controller.

Brown "ElectroniK" Circular Scale Potentiometer Indicator Controller.



Brown "ElectroniK" Single or Multi-point Strip Chart Potentiometer.

Continuous measurement with increased sensitivity is achieved by the Brown "ElectroniK" Potentiometer in which a simple amplifier assembly has replaced the conventional galvanometer and cyclic balancing mechanism. Common unit replacement, simplicity and ruggedness in construction ensure reliable operation. We shall be pleased to send you Application and Specification Bulletins giving fuller details of the Brown "ElectroniK" Potentiometers.

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DAVY-UNITED

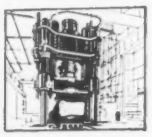
HIGH-SPEED

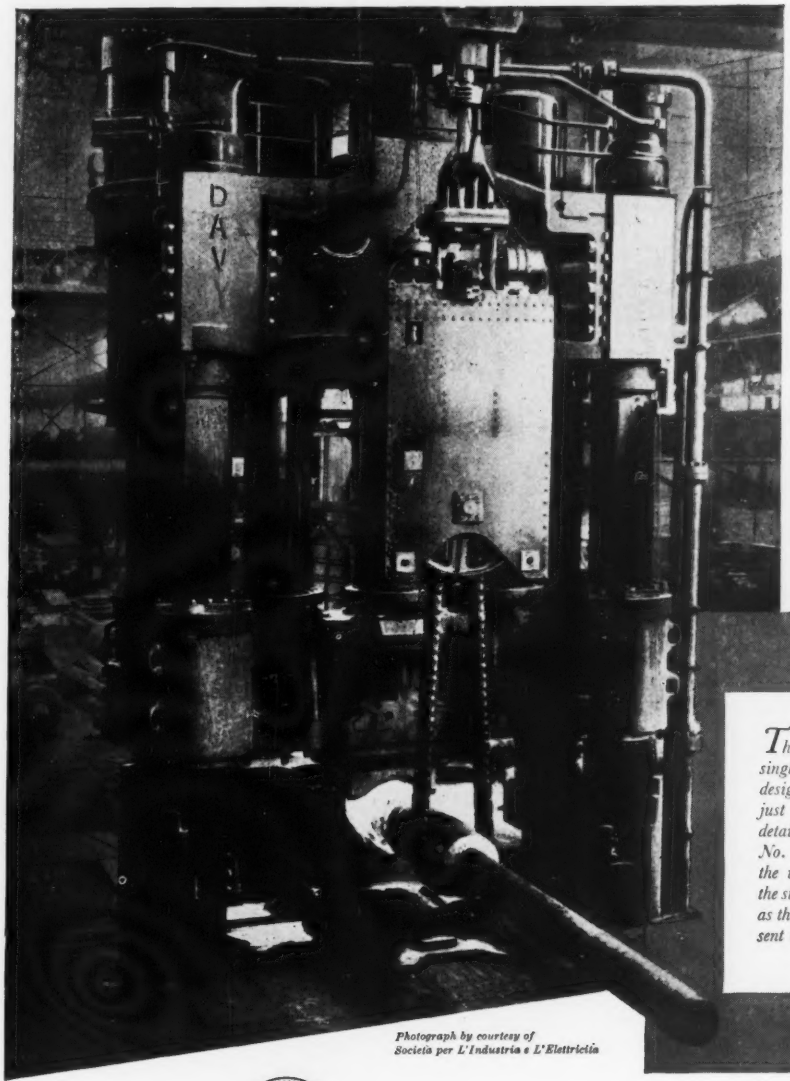
FORGING PRESSES

Forging on a " Davy " press has been a world-wide steelworks practice for nearly three-quarters of a century. Throughout that time can be traced a steady record of development not only in size, power and flexibility of drive and control but also in adaptability in design to meet the individual case.

Among the many special-purpose presses of this celebrated marque the one illustrated is unique. A combined forging and bending press, it is designed for general forging work up to 8,000 tons and for armour plate bending up to 12,000 tons power, and is installed in the Terni Works, Italy, of Società per L'Industria e L'Elettricità. It has three cylinders, each of 4,000 tons power, using the centre or two outer cylinders for forging and all three for bending.

In this case the three-cylinder design was adopted not only for the benefits of economical working resulting from the ability to vary the number of cylinders in use, but also to allow the crosshead to tilt when bending armour plates.





Photograph by courtesy of Società per L'Industria e L'Elettricità

The comparative advantages of single, duplex and three-cylinder design in the modern forging press is just one of the subjects discussed in detail in Davy-United Publication No. 102, a publication which covers the whole field of press forging from the standpoint of the user as well as the designer. A copy will be sent on request. *

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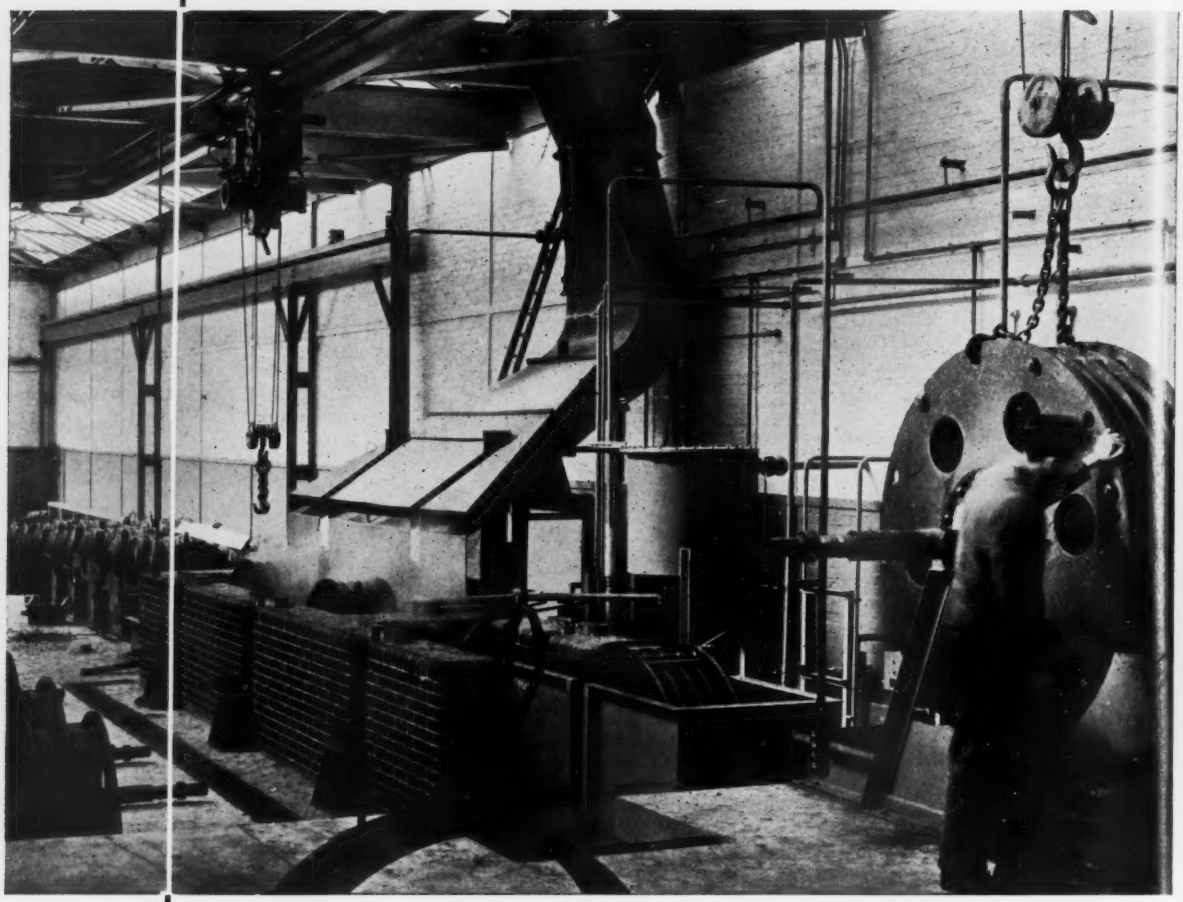

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When enquiring, give the following particulars:

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B Internal and External diameter of coil.
C Gauge of strip.
D Width of strip.
E Tonnage required per hour.

JT

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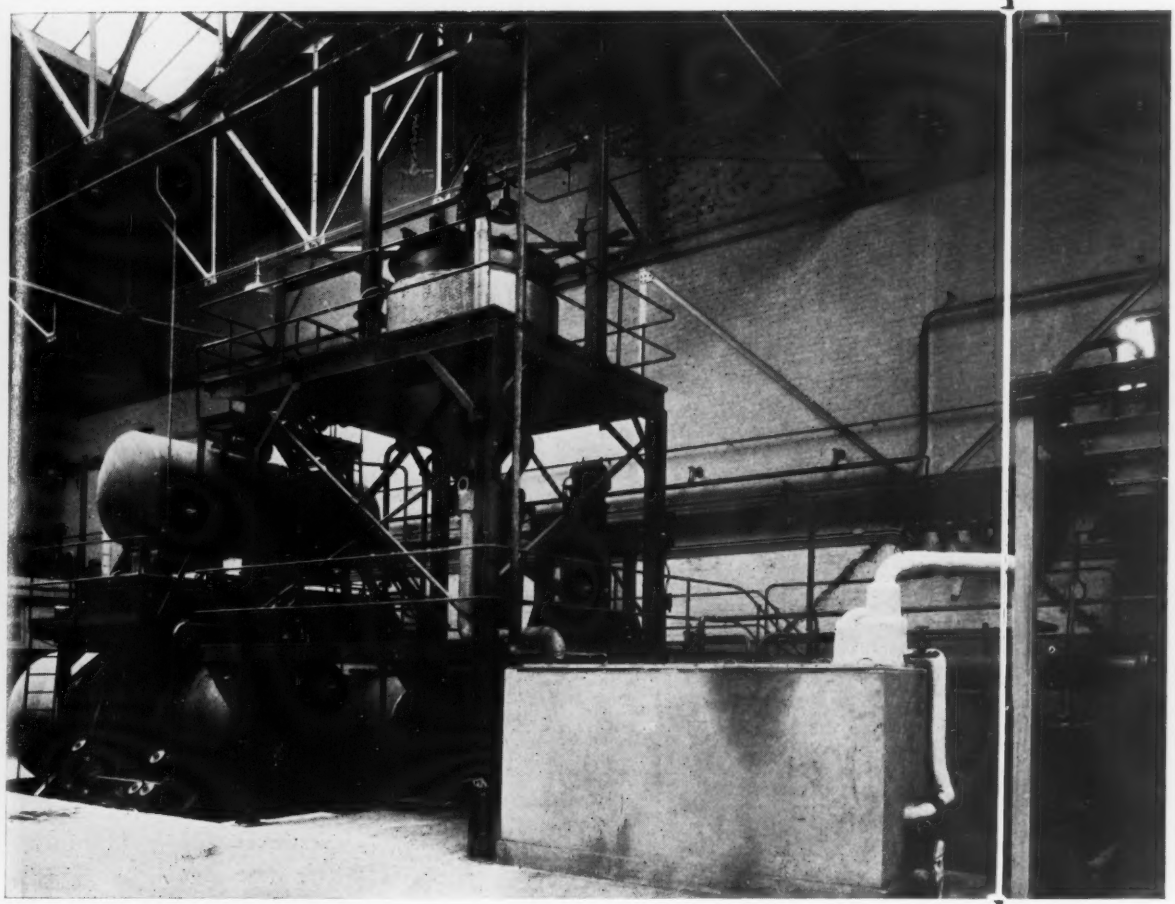

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THE RESTRICTED SUPPLIES OF SULPHURIC ACID.

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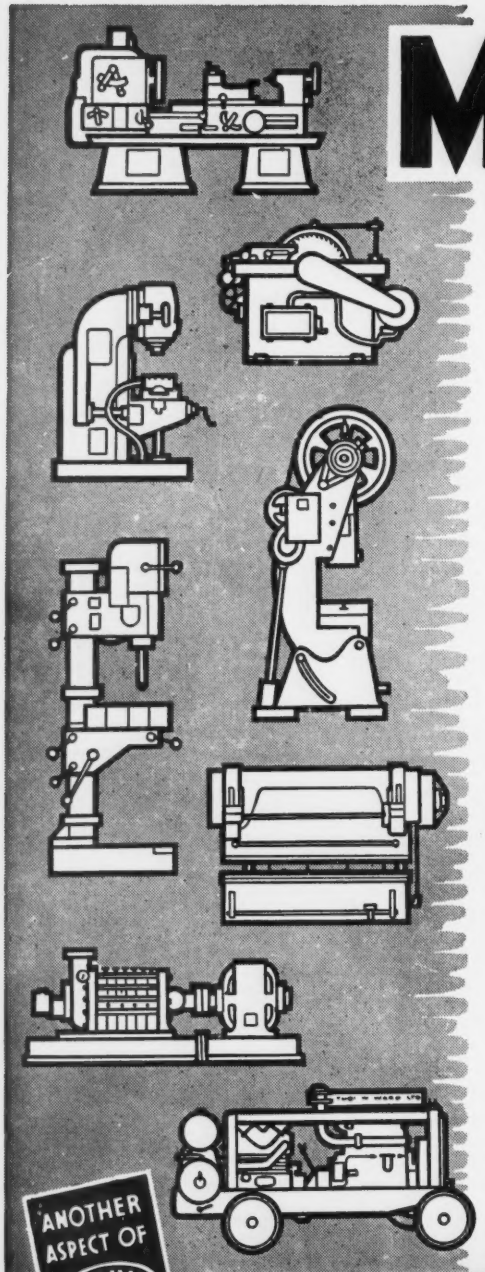

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SECONDHAND S.S. & Sc. LATHE, Flat gap bed, all geared head, 22″ centres on 35′ 0″ bed, admits 27′ 0″ between centres, swing in gap 5′ 1″ × 18″ in front of chuck, 4′ 6″ dia. 4-jaw Chuck plate with 4 dogs, two saddles each fitted with 4 bolt clamp type compound tool posts, single pulley drive 34″ × 9″, solid spindle, 2′ 4″ across shears, 3 point steady, 16 spindle speeds 1.6/45 r.p.m., 3 surfacing feeds 9/22 c.p.i., 3 sliding feeds 9/22 c.p.i. 20 H.P. 220/3/50 cycles L.D.C. Slip Ring Induction Motor, texrope pulley, B.T.H. Starting panel with Ammeter, change wheels.
Make—NOBLE AND LUND. Cat. Ref. 84160.

SECONDHAND S.S. AND Sc. LATHE, with twin saddles, centre height 30″, admits 30′ 0″ between centres, all geared headstock, 6′ 0″ dia. faceplate, with 4 jaws, direct motor drive, including 45 h.p. slip ring motor 220/3/50 supply, and separate 5 h.p. motor, quick setting device, 3 point steady, such changewheels as are available, and leadscrew attachment.
Make—SHANKS. Cat. Ref. 83252.

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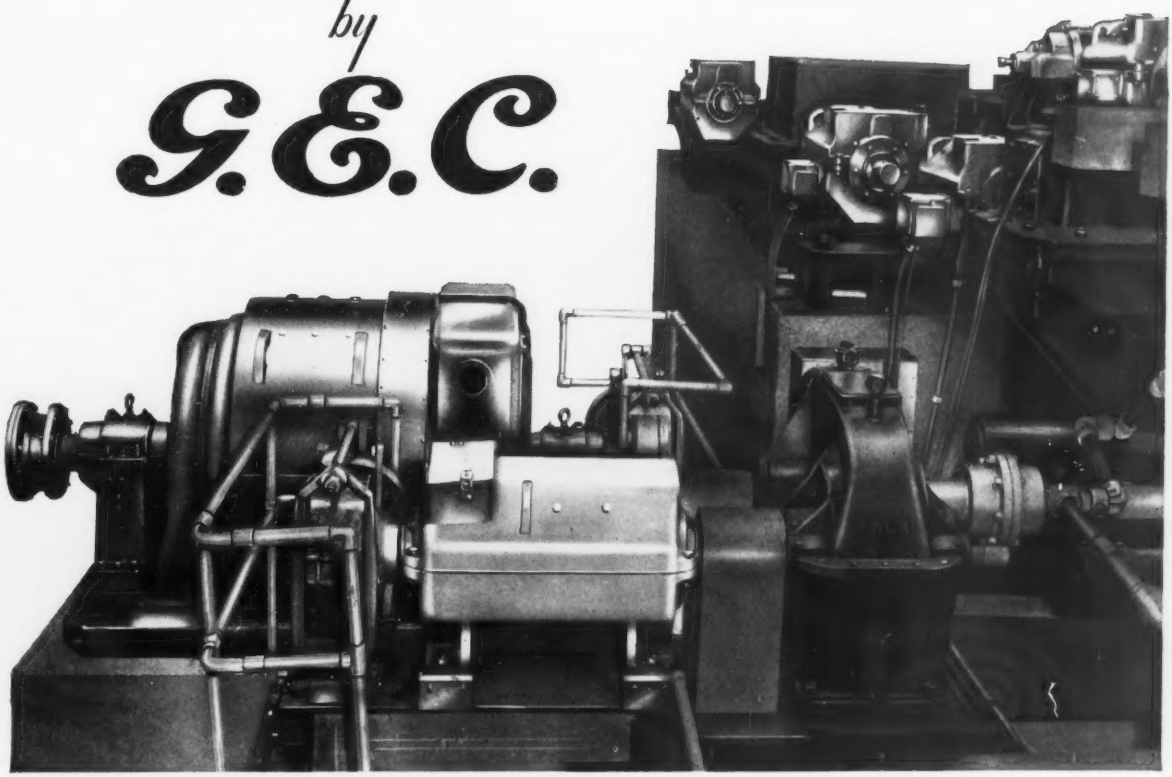
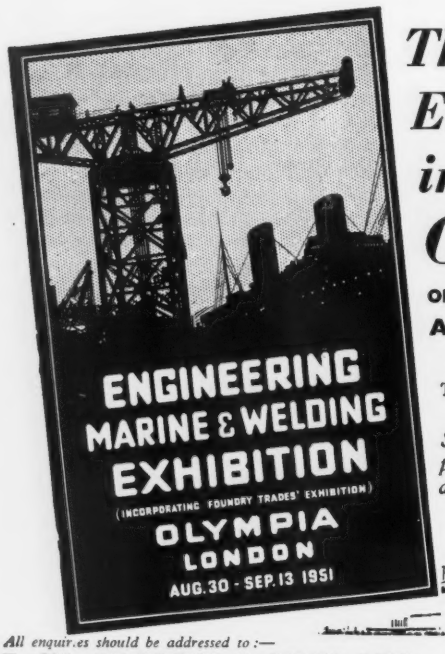


One of two main G.E.C. driving motors of the slab shear and various D.C. steelworks motor drives for the slabbing mill.

for **THE STEEL COMPANY OF WALES LTD.**

THE GENERAL ELECTRIC CO. LTD., MAGNET HOUSE, KINGSWAY, LONDON, WC2



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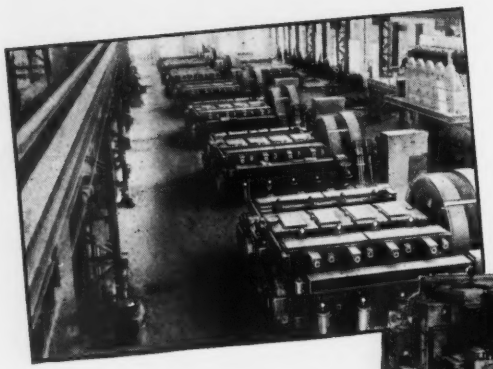

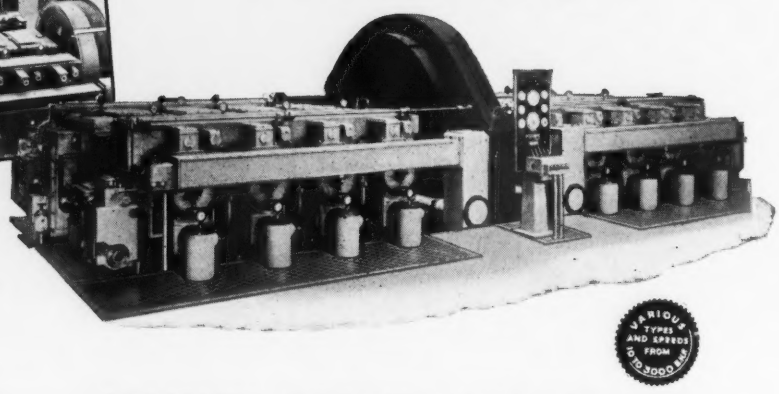

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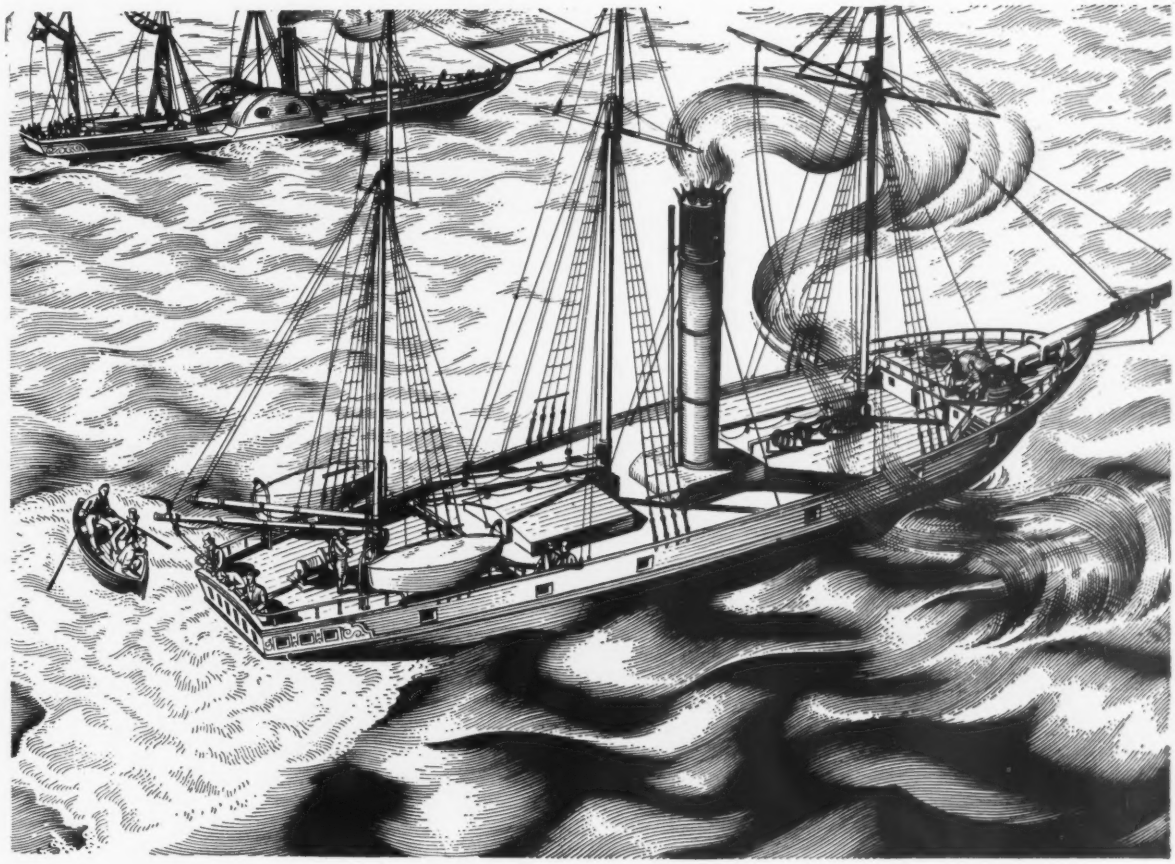
P.80

Pettit Smith was lucky...



...but we don't rely on accidents

Pettit Smith in 1839 fitted an Archimedean screw to a 232- ton steamship, the Archimedes; *hitherto only paddles had been used for propulsion. The screw was single-threaded, with one complete revolution, and results were not very good. One day, it is said, the ship fouled some wreckage and half the screw broke off, whereupon the vessel drove forward much faster. This led Smith to develop his half-revolution screw, which was very successful and was taken up by several builders, being used in the famous* Great Britain.

Discovering facts which enable better materials and processes to be developed is more often a matter of patient investigation and extended trials than of luck.

We do not rely on the happy accident. We have a well-equipped Research Laboratory and a staff of experienced metallurgists and engineers. Their approach is scientific and their object is to overcome difficulties in fabrication and to develop improved materials to do a practical job.

If you have a problem affecting the choice of a material, write to us about it—our services are freely at your disposal.

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COAL WASHING

The latest "Simcar" dense medium washer, employing a magnetic medium, is unquestionably the most efficient and scientific method of dense medium coal cleaning. The "Simcar" pilot plant at Cheadle Health has been built to prove this claim by actual demonstration, and those interested in dense medium washing are invited to arrange with us for large-scale tests.

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S.C.5.

Incandescent have now put into operation a mechanized sheet mill at Messrs. Degerfors Järnverks, A.B., Sweden—a company renowned for the production of stainless and other quality steels.

New plant installed includes three continuous walking beam bar and pack furnaces, mechanical tables for 2- and 3-high mills, conveyors, roll polisher and all ancillary equipment necessary for a fully mechanized mill.

The walking beam furnaces, one of which is shown, operate at temperatures up to 1,200°C, and the refractory faced beams are hydraulically operated.

Yet another example of Incandescent Mechanization helping to further economic recovery in Europe.

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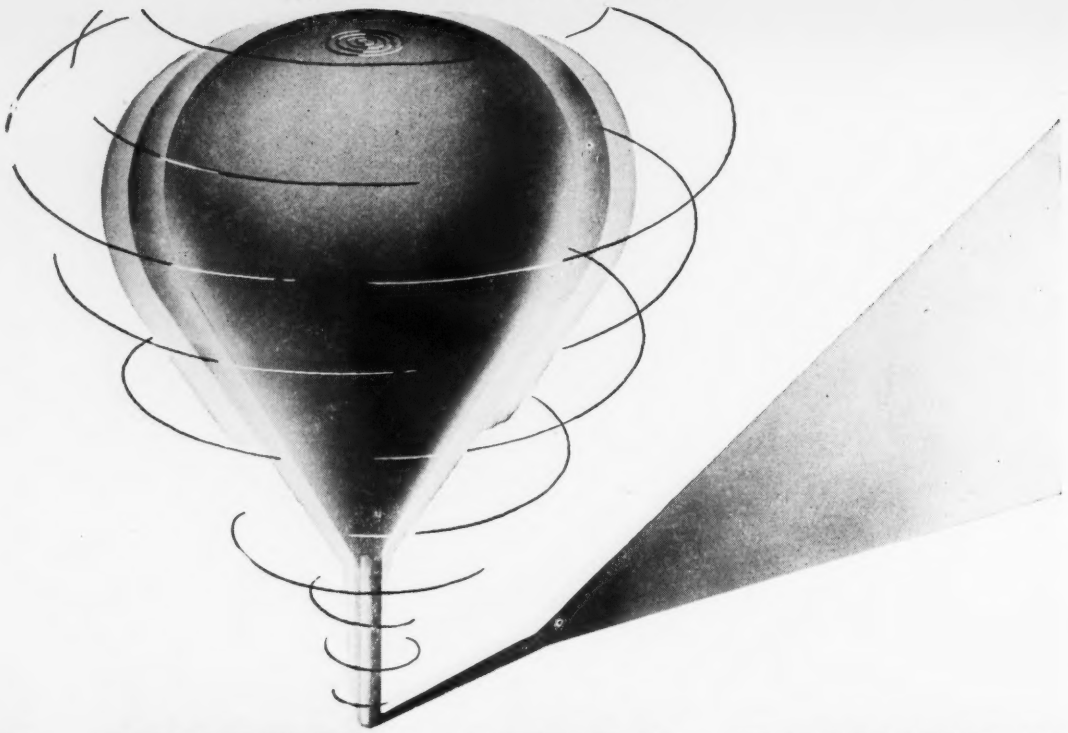

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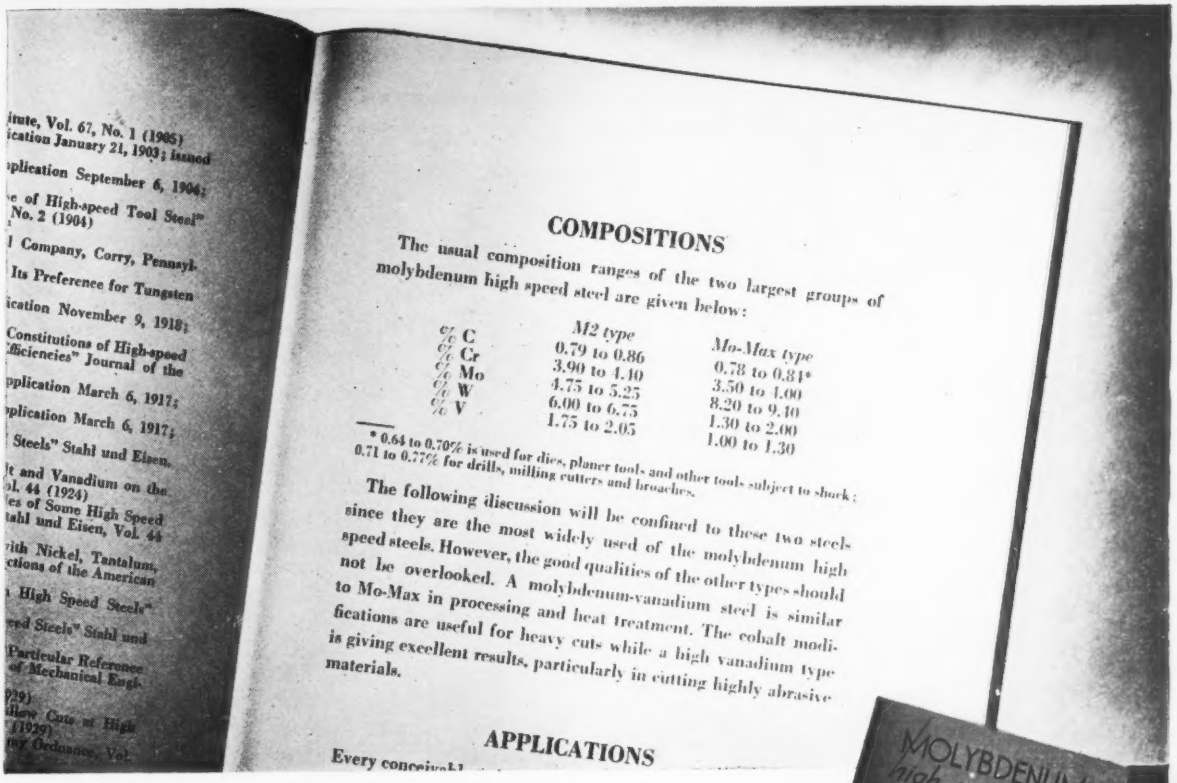
MOLYBDENUM HIGH SPEED STEELS



COMPOSITIONS

The usual composition ranges of the two largest groups of molybdenum high speed steel are given below:

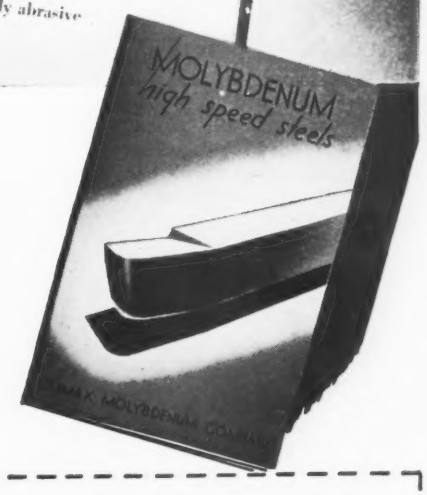
	M2 type	*Mo-Max type*
% C	0.79 to 0.86	0.78 to 0.84*
% Cr	3.90 to 4.40	3.50 to 4.00
% Mo	4.75 to 5.25	8.20 to 9.40
% W	6.00 to 6.75	1.30 to 2.00
% V	1.75 to 2.05	1.00 to 1.30

* 0.64 to 0.70% is used for dies, planer tools and other tools subject to shock; 0.71 to 0.77% for drills, milling cutters and broaches.

The following discussion will be confined to these two steels since they are the most widely used of the molybdenum high speed steels. However, the good qualities of the other types should not be overlooked. A molybdenum-vanadium steel is similar to Mo-Max in processing and heat treatment. The cobalt modifications are useful for heavy cuts while a high vanadium type is giving excellent results, particularly in cutting highly abrasive materials.

APPLICATIONS

Every conceivable



—ARE HERE TO STAY

This 30 page Technical Booklet, which deals with compositions, applications, performance and treatment, gives you some of the reasons why.

Write now for a copy. It is available free on request to tool manufacturers and users.

Climax Molybdenum Company of Europe Ltd.

Technical enquiries for this book, preferably with full details of the projected application of Molybdenum steel, should be addressed to:

99 Pinstone St. Sheffield, 1.

(*Registered Office* : **2-3 Crosby Square, London E.C.3.**)

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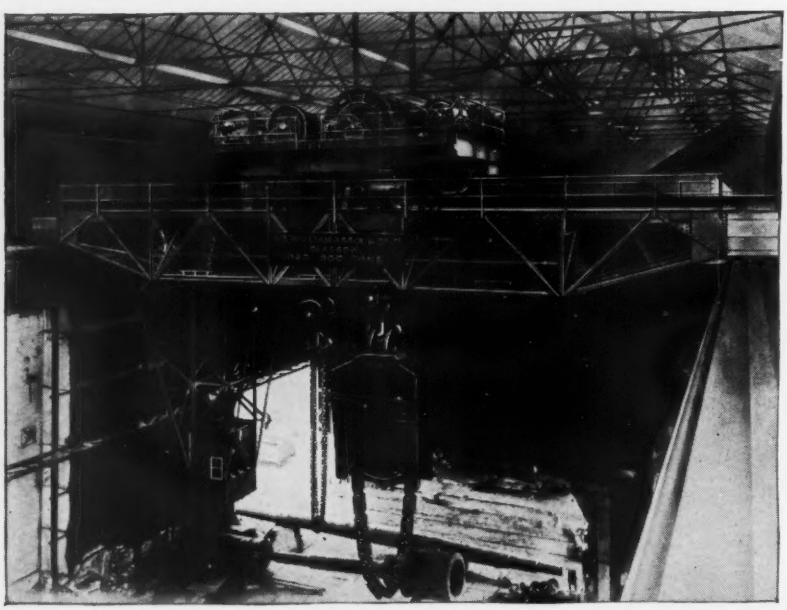
Arrol: Cranes

of course and a hundred and one other structures . . .

FULL SWING AT ARROLS has immense reach. It covers responsibility for the design and manufacture of the largest projects engaging mechanical, hydraulic and power engineering, heavy steel construction and the development of new tools and equipment. From the listing of products it will be seen that Arrol's fame as Bridge Builders is only one chapter in a volume of world activity, the whole of which is very impressively greater than its most distinguished part.



All types of heavy steel frame buildings, cranes, charging machines and other equipment for steelworks, transporters for coal and ore handling, fixed and opening bridges, and other special mechanical and structural work.

The illustration shows a 300-ton forge crane with electric turning gear.

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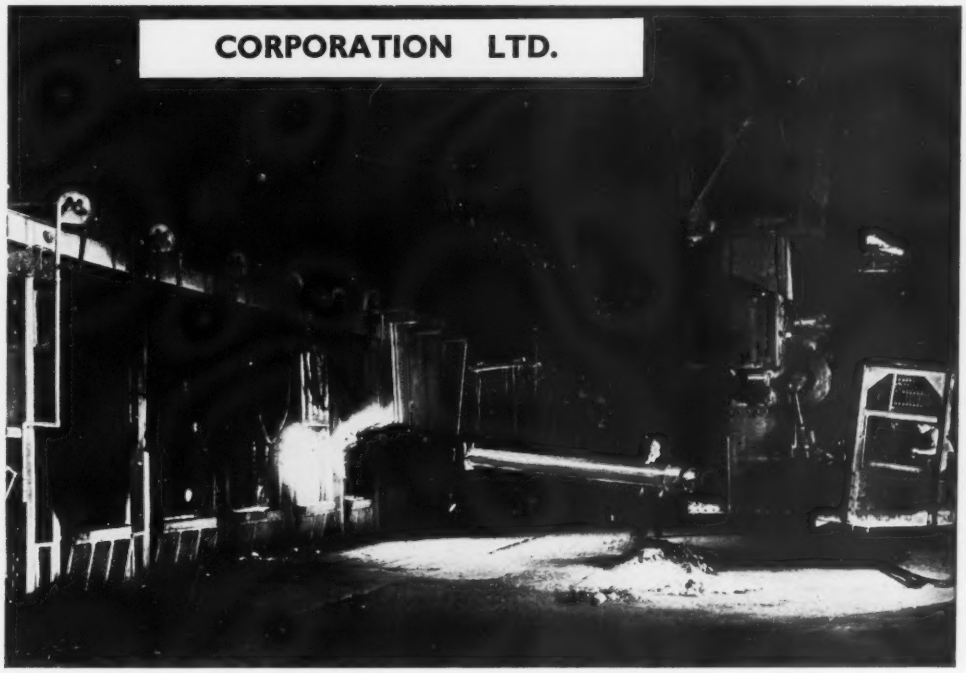

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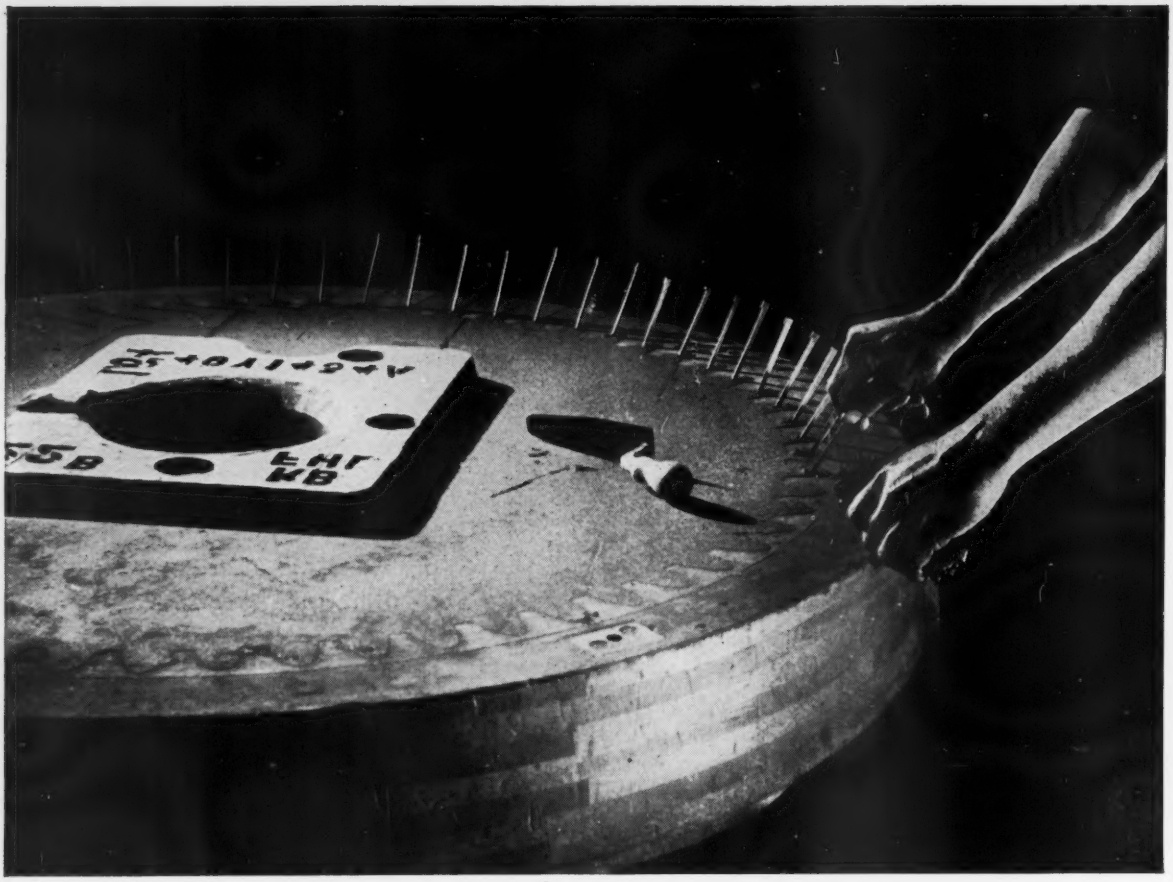

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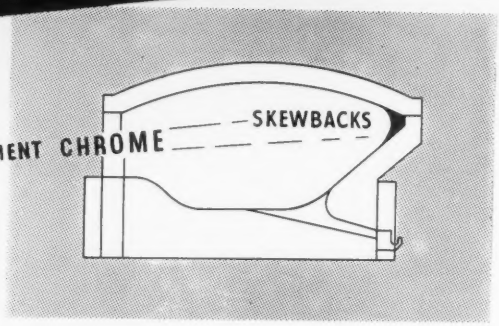

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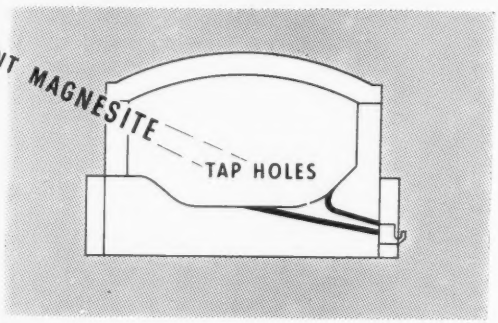
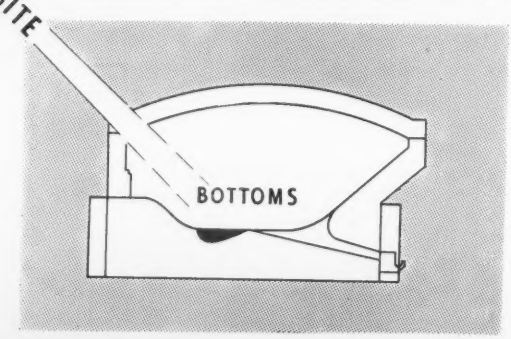


GUN CEMENT MAGNESITE



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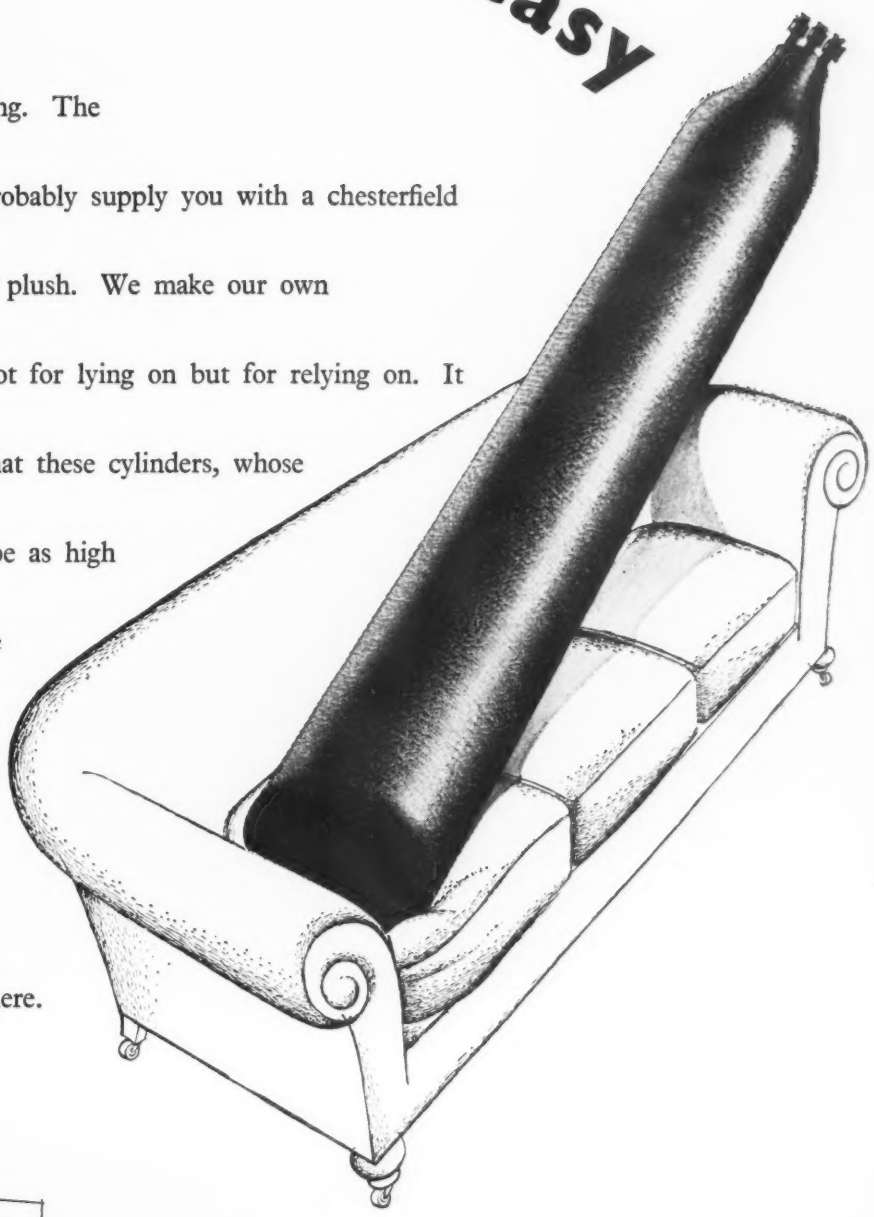

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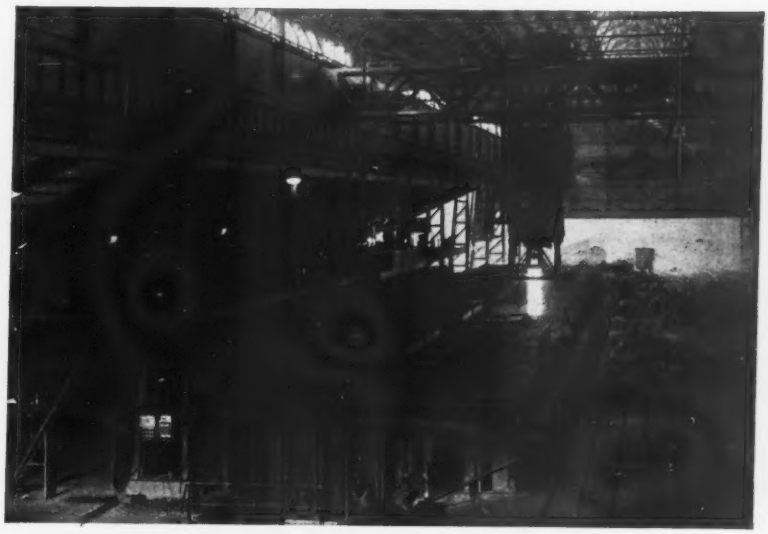

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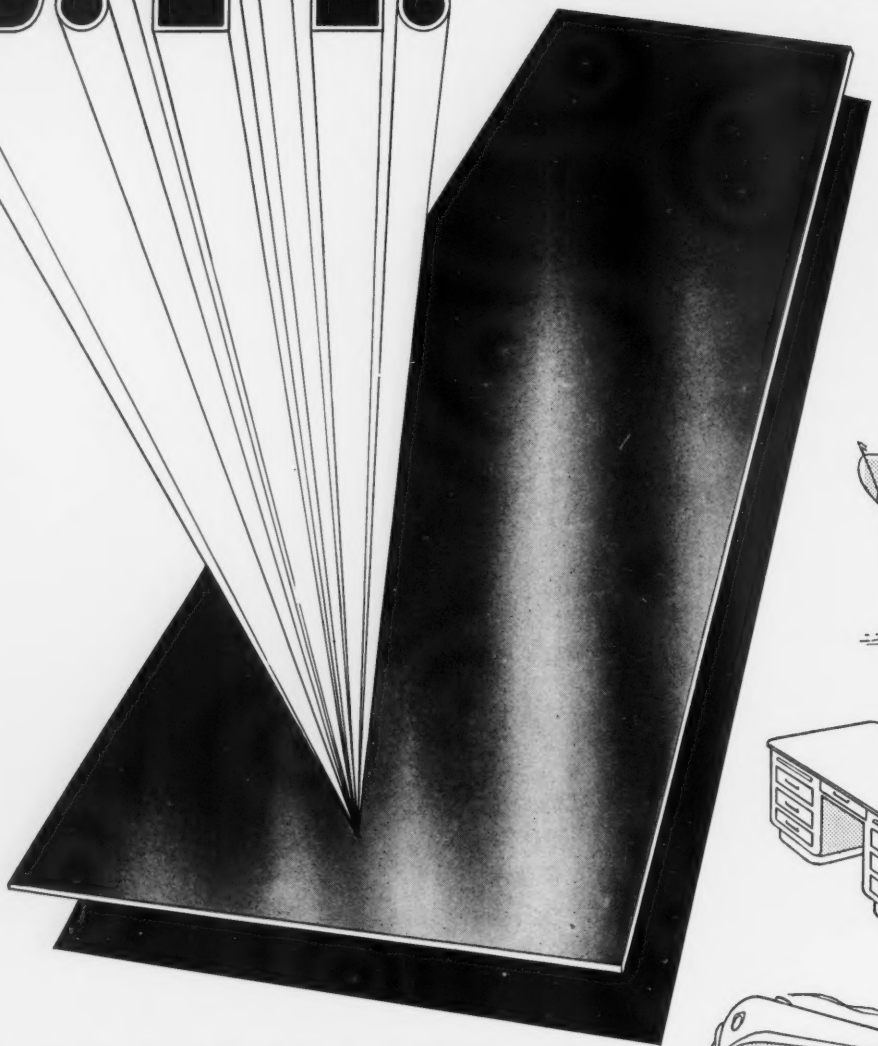

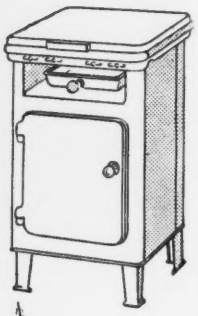

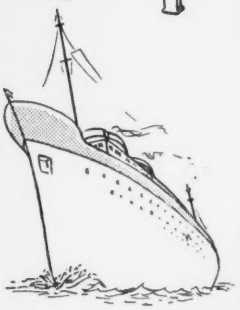

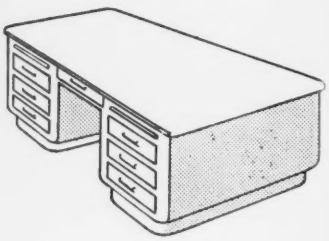

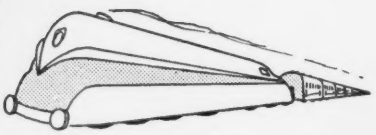

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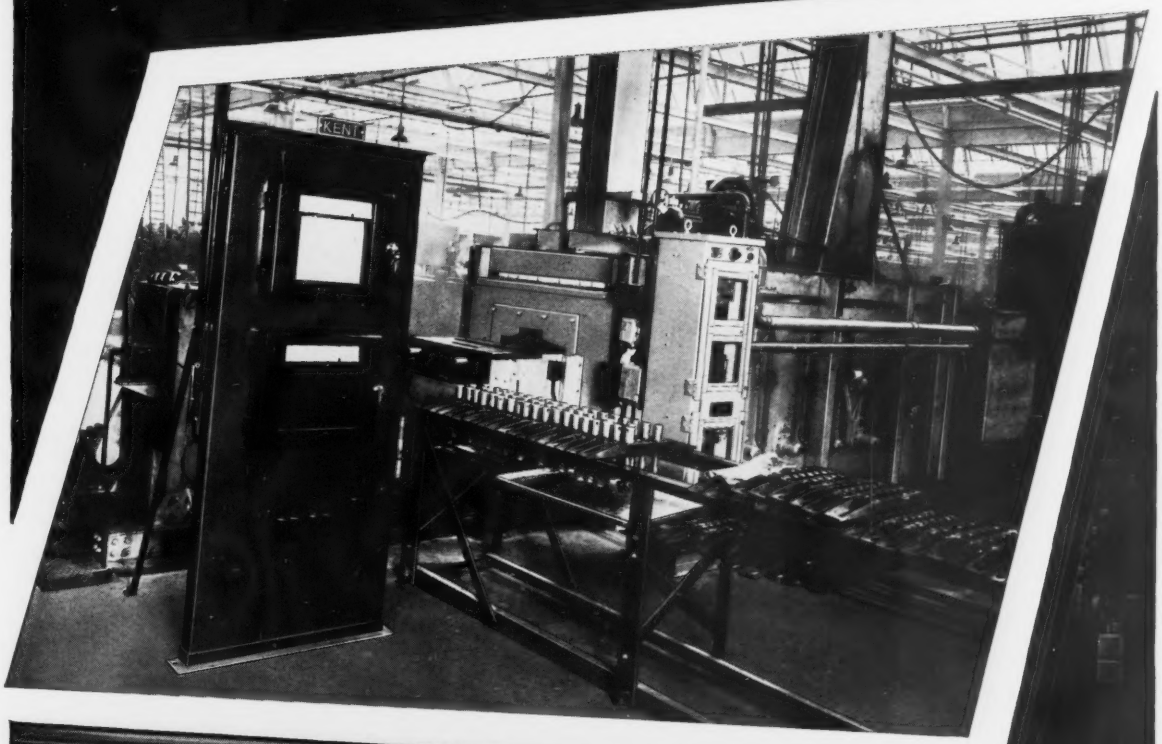

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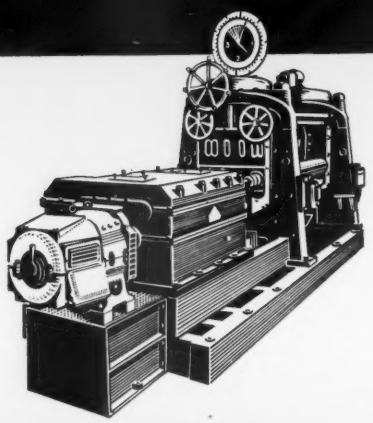

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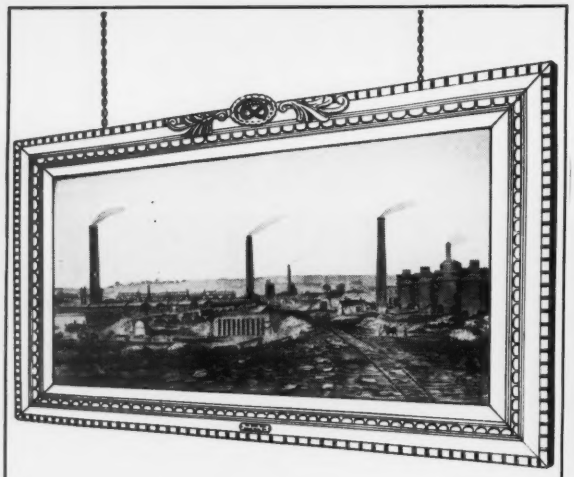

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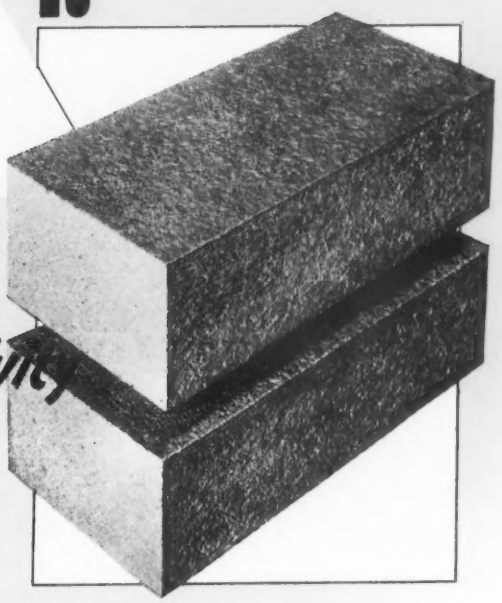

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MORGAN M.R.I. is recommended for any position where fire-brick is used; particularly where conditions are severe and life short.

Our Refractory Engineers will be pleased to discuss the suitability of MORGAN M.R.I. to your particular application.

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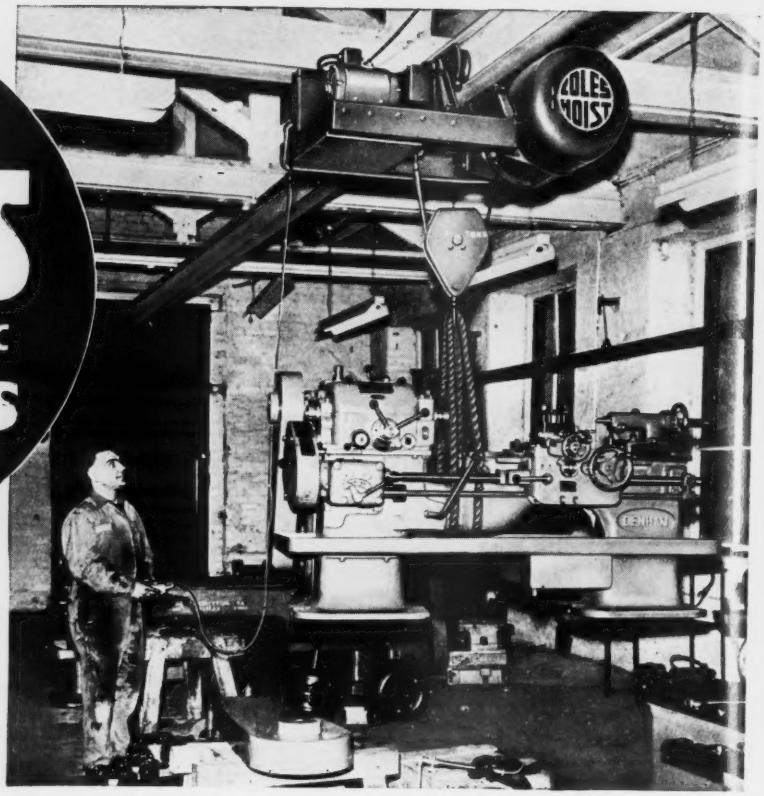
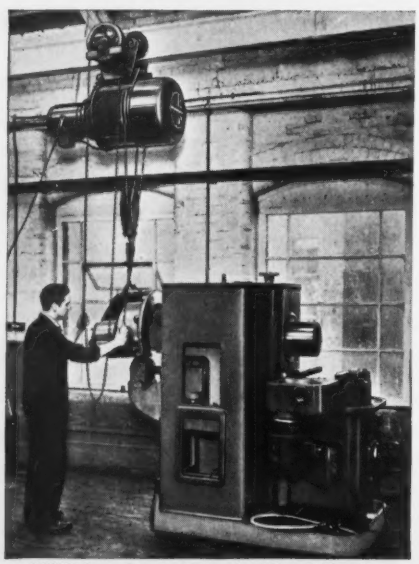


COLES 3 ton Electric Hoist and Travel



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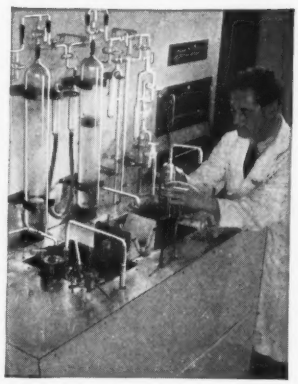
Mactra Shells or Surf Clams are found all over the world. They are triangular, pale-coloured bivalves and have a prominent hinge with a central 'tooth' in one valve, which registers in a pit in the opposite valve. They are generally less than two inches in diameter. The species illustrated above is Mactra Vitrea, the Shiny Surf Clam. This very delicate, diaphanous shell is found in the Moluccas.

Shell Vitrea Oil is one of the wide range of Seashell Oils, all of which are named after seashells.

SHELL VITREA OIL



Seashell Oils are produced as the result of world-wide research. This Shell scientist is investigating the basic chemical processes involved in the oxidation of a lubricating oil.

SHELL VITREA OILS are highly refined straight mineral oils available in a wide range of viscosities. They are suitable for use as bearing or gear lubricants in circulating and other enclosed lubrication systems where straight mineral oils of good stability are satisfactory.

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